

Plug-in

# Diplexer

## DPLC-8510A01M+

75Ω 5 to 1225 MHz  
(5-85, 102-1225 MHz)



Generic photo used for illustration purposes only  
CASE STYLE: QC2228

### The Big Deal

- Plug-in design
- Field replaceable
- Low insertion loss
- Excellent return loss, 24 dB typ.
- High cross over isolation
- Low group delay variation in passband
- DOCSIS 3.1 standard

### Product Overview

DPLC-8510A01M+ is a high performance field replaceable plug-in diplexer with the lowpass port at 5-85 MHz and highpass port at 102-1225 MHz. Excellent return loss combined with high out of channel rejection makes it an ideal part in cable TV and multiband radio systems

### Key Features

Feature	Advantages
Low passband insertion loss	Ensures low signal loss through both the channels.
Excellent Stopband rejection	Co-channel rejection of 50dB typical ensures unwanted spurious are eliminated.
Excellent return loss at 5-85 and 102-1225 MHz	This makes signal transmission with very less reflection and well-matched with the adjacent component used in the system.

#### Notes

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**+RoHS Compliant**  
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

## Maximum Ratings

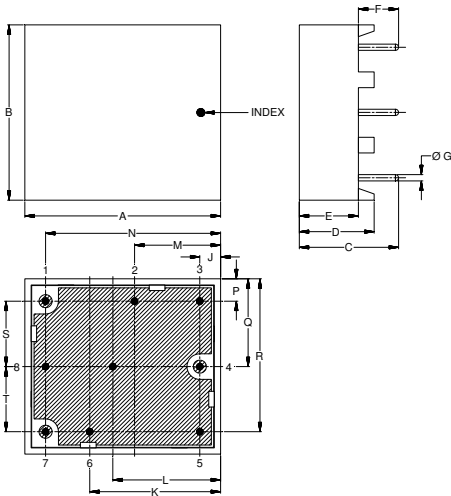
Operating Temperature	-40° to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	30dBm Max.

Permanent damage may occur if any of these limits are exceeded. These ratings are not intended for continuous normal operation

## Pin Connections

HIGH PASS PORT	1
LOW PASS PORT	7
COMMON PORT	4
GROUND	2,3,5,6,8,9

## Outline Drawing



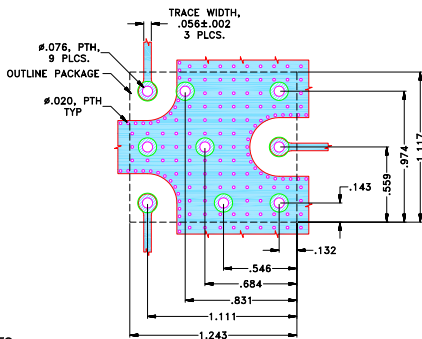
## Outline Dimensions (inch mm)

A	B	C	D	E	F	G	H	J	K
1.243	1.117	.630	.475	.375	.255	.040	--	.132	.831
31.56	28.36	16.00	12.07	9.53	6.48	1.02	--	3.35	21.10
L	M	N	P	Q	R	S	T	Wt.	
.684	.546	1.111	.143	.559	.974	.417	.415	grams	
17.37	13.87	28.22	3.63	14.21	24.74	10.58	10.53		7

Note: Please refer to case style drawing for details

**Demo Board MCL P/N: TB-929+**  
**Suggested PCB Layout (PL-495)**

SUGGESTED MOUNTING CONFIGURATION FOR  
QC2228 CASE STYLE



## NOTES:

- TRACE WIDTH IS SHOWN FOR IT180, WITH DIELECTRIC THICKNESS .059"±.005", COPPER: 1/2 Oz EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
- BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
- DENOTES COPPER LAND PATTERN FREE OF SOLDERMASK

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## Features

- Low insertion loss
- 75Ω Impedance
- Excellent return loss 24 dB typ.
- Low group delay variation
- High cross over isolation
- High rejection

## Applications

- Cable TV systems (DOCSIS 3.1 standard)
- Multiband radio systems

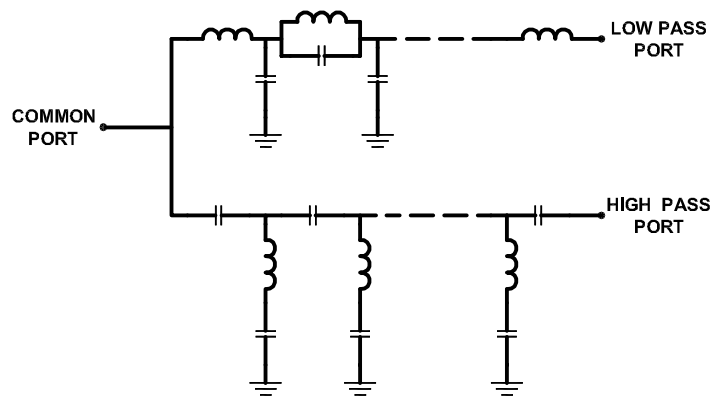


**CAUTION NOTE:** Not designed for reflow process.

## Electrical Specifications at 25°C

Parameter	Port	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Low Pass	5	-	-	0.20	dB
		85	-	-	1.30	dB
		102	-	-	1.75	dB
		105	-	-	1.30	dB
		130	-	-	0.60	dB
		1225	-	-	0.65	dB
	High Pass	870	-	-	0.50	dB
		1000	-	-	0.55	dB
		1218	-	-	0.60	dB
		102-104.9	20	24	-	dB
		105-1225	20	24	-	dB
		105-1225	20	24	-	dB
Return Loss	Low Pass	5-85	22	24	-	dB
		102-104.9	20	24	-	dB
	Common	5-85	22	24	-	dB
		102-104.9	20	24	-	dB
Stop Band Isolation	High Pass	5-84.9	48	50	-	dB
	Cross over	85-104.9	38	40	-	dB
	Low Pass	105-1225	45	50	-	dB
Group Delay Variation	High Pass	109.275-112.855	-	6	8	ns
		115.275-118.855	-	3	6	ns
		121.2625-124.843	-	2	5	ns
	Low Pass	82-83.5	-	-	6	ns
		83.5-85	-	-	8	ns

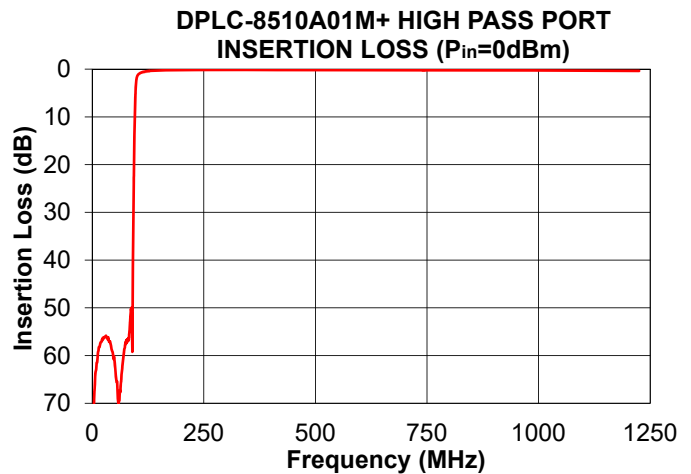
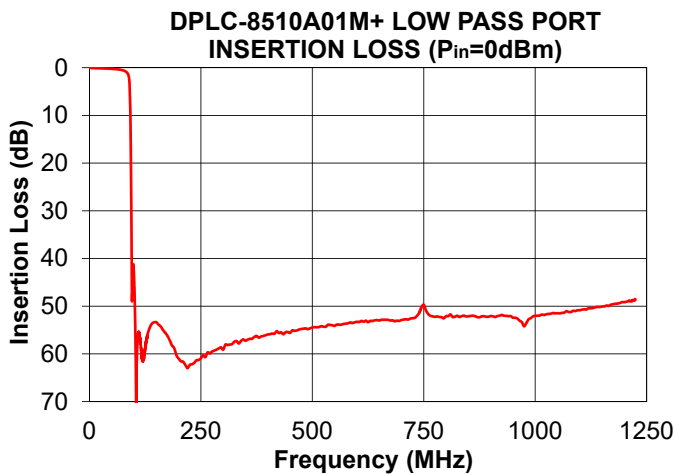
## Functional Schematic



## Typical Performance Data at 25°C

FREQUENCY (MHz)	INSERTION LOSS (dB)		RETURN LOSS (dB)		
	Low Pass Port	High Pass Port	Common Port	Low Pass Port	High Pass Port
1.000	0.05	80.52	51.36	51.93	0.04
5.000	0.09	67.60	41.87	43.17	0.04
82.000	0.84	56.66	29.63	30.41	0.27
83.500	0.96	54.98	28.57	32.11	0.30
84.900	1.10	52.97	26.73	31.86	0.34
85.000	1.11	52.81	26.58	31.80	0.34
90.000	3.62	59.20	11.19	9.29	0.54
92.000	11.74	33.57	5.37	2.81	0.72
93.500	24.53	21.32	4.11	1.54	1.00
94.500	38.18	15.17	4.04	1.23	1.41
96.000	47.61	8.17	5.28	0.98	2.99
98.000	41.45	3.26	10.97	0.80	8.54
99.000	41.75	2.27	15.63	0.74	12.91
102.000	50.81	1.28	29.72	0.62	33.26
104.900	70.74	0.98	24.85	0.56	24.02
105.000	70.12	0.97	24.78	0.55	23.83
109.275	55.77	0.75	23.25	0.51	22.34
112.855	56.63	0.62	23.41	0.48	23.36
115.275	58.23	0.56	24.00	0.47	24.57
118.855	61.37	0.49	25.46	0.46	26.89
120.000	61.01	0.47	26.05	0.46	27.84
121.263	60.76	0.46	26.77	0.46	28.98
124.843	58.89	0.41	29.24	0.46	33.02
130.000	55.97	0.36	33.02	0.45	40.15
400.000	55.93	0.18	26.66	0.37	25.18
870.000	52.28	0.26	29.23	0.43	30.32
1000.000	52.01	0.28	35.75	0.49	32.78
1218.000	48.96	0.36	24.64	0.60	32.26
1225.000	48.64	0.36	24.40	0.61	31.35

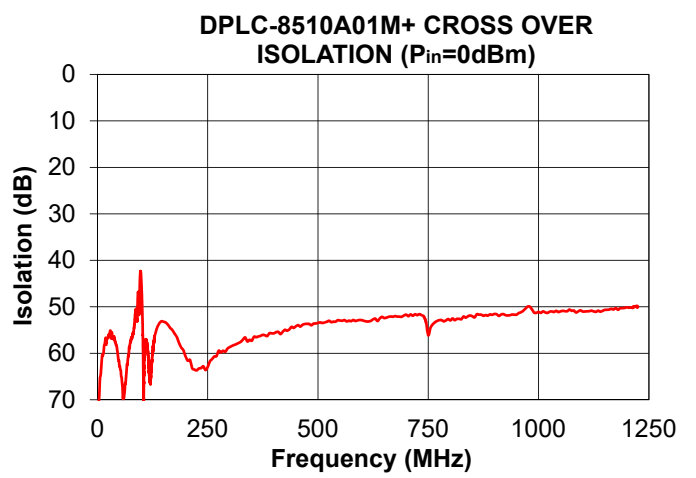
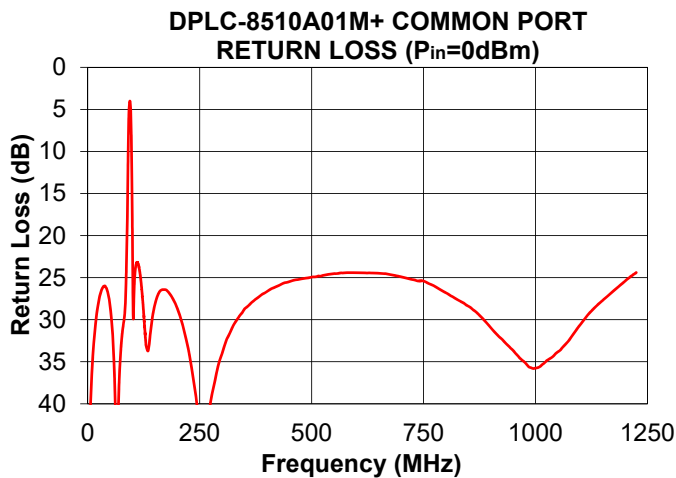
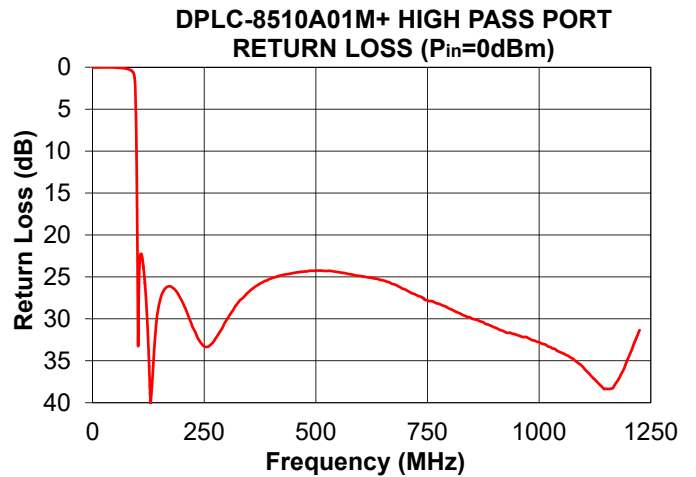
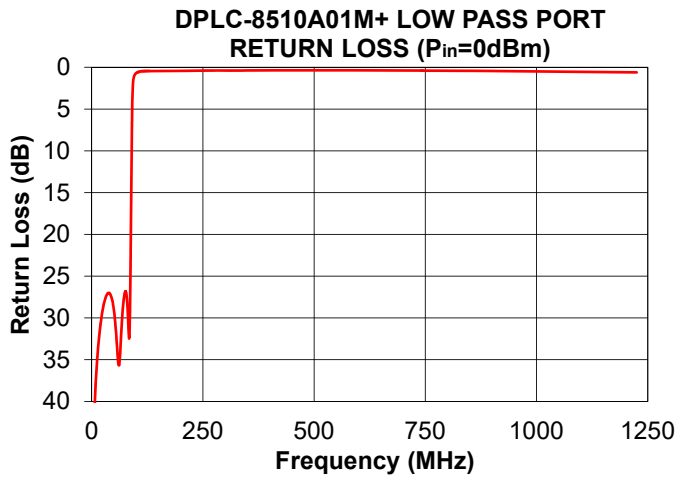
## Performance Charts



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